US Army Corps of Engineers®
Engineer Research and Development Center

The USACE DataNet

Technology

The DataNet employs a network-centric approach to streamline and standardize the acquisition, dissemination, and management of data across all USACE business areas. The primary objectives of the DataNet are to:

- Develop, promote, and deploy a common net-centric framework that provides a consistent interface to data sources internal and external to USACE.
- Formalize connectivity to the data-sharing partners of the U.S. Army Corps of Engineers (USACE) (Federal and State governments, universities, industry, and the public).

Problem

USACE relies on interactive computer-based systems to identify and assess alternatives, make decisions, and solve problems. The principal component of the decision-making process is data. Data required to support USACE decision making are available from both internal and external sources. External sources include other Federal agencies (U.S. Geological Survey (USGS), U.S. Department of Agriculture (USDA), National Oceanic and Atmospheric Administration (NOAA), National Aeronautics and Space Administration (NASA), etc.) as well as private industry and academia. Acquisition of these data is often accomplished via ftp, http, or CD, and results in inefficient and inconsistent use of the data sources. Moreover, data are provided in a myriad of disparate formats and structures while the models and assessment tools that consume these data require differing formats as well. The efficient handling of data is critical in making appropriate as well as timely, cost-effective decisions. There is clearly a problem when a scientist must spend more time acquiring, manipulating, transforming, and organizing data than analyzing those data.

Expected Cost To Implement

Costs to implement this technology are dependent on the level of expertise of the software developers. Use of this technology requires knowledge in object-oriented programming as well as proficiency in a programming language that supports WSDL to object creation, such as Java, C#.net, or VB.net. Vendors offer Integrated Development Environments (IDE), such as Java netBeans and Microsoft Visual Studio.net, that facilitate application development. Java netBeans is available free from http://www.netbeans.org/downloads/index.html while Microsoft Visual Studio.net is available at http://msdn.microsoft.com/howtobuy/vstudio/vstudiose/default.aspx for $799.

Benefits/Savings

The DataNet provides a standards-based, cross-platform Web-centric framework that allows software developers the capability to use heterogeneous operating systems and development environments.

The DataNet is consistent with the basic guiding principles of data management by providing a solution that avoids duplication in data acquisition; facilitates the sharing of data, both internal and external, via networks and partnerships; adheres to standards; promotes owner-level management and service level agreements; requires metadata for data and services; and is accessible by distributed, heterogeneous applications.

The DataNet reduces the time users typically spend locating, acquiring, manipulating, and organizing data. Several client applications have already embraced the DataNet as a source for data acquisition and delivery, including a desktop browsing application, an ex-

tension to a commercial software product (ArcGIS), and a legacy hydrological modeling system (Watershed Modeling System). Each of these applications consumes the Web services connected to the DataNet to support some of its data requirements. These applications represent three very different environments that require access to the same data sources. In all three applications, the time required to acquire and format model-ready data for a 100- × 100-km area of interest was minutes rather than hours. Because access to these data sources was available as a standard Web service via the DataNet, the software developers for all three applications were able to provide increased functionality, programmatically, that drastically reduced the time that users previously spent locating, acquiring, and managing data.

Status

Currently, thirteen DataNet Web services are available via the CDF Service Registry, located on-line at https://swwrp.usace.army.mil under the Toolbox tab. Services include:

- USGS national elevation data (ned)
- NOAA estuarine bathymetry
- University of Utah MesoWest precipitation/weather
- METAR current surface conditions
- NCDC NOAA historic monthly precipitation
- USGS real-time stream flow
- USGS historic stream flow
- NOAA tidal data
- USACE national inventory of dams
- USGS land use/land cover data
- USDA STATSGO
- USEPA STORET
- USGS space shuttle radar topo maps

Access to the Toolbox requires login with UPASS userid and remote access password. As new services are developed and approved for use, they will be added to the CDF Service Registry.

ERDC POC

James Stinson, Denise Martin

Distribution Sources

See Status above.

Available Documentation

Technical Notes describing the development and use of DataNet services are available at https://swwrp.usace.army.mil under the Publications tab, Unifying Technologies option.

Available Support and Training

Workshops and/or Web-based Live Meetings can be scheduled by contacting Denise Martin at denise.b.martin@erdc.usace.army.mil.